

JOURNAL

OF THE

New York Entomological Society.

Vol. VII.

SEPTEMBER, 1899.

No. 3.

NOTES ON TRYPETIDÆ WITH DESCRIPTIONS OF NEW SPECIES.

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Since the publication of Loew's Monograph of the Trypetidæ of North America in 1873 several new species have been described by various authors. For the reception of some of these species new genera have been erected. Others very obviously belong to some of the already established genera, but in order to include these new forms the definitions of these genera have needed more or less modification. Thus we find in this group, as in every other, that no matter how carefully they may be worked up at any time, in the course of a few years a revision of the work becomes very desirable. Until such a revision shall be made the true location of some of the forms already described and several of those described herewith cannot be definitely determined. In describing the new species that have come before me in the past year I have erected no new genera, choosing rather to place them in genera already established, and to which they seem more or less closely related, leaving the determination of their true location until the time when the family shall be revised.

In an article on "A New Trypetid" in Ento. News, Vol. IX, No. 3, I set forth my reasons for believing that the segment usually referred to as the ovipositor in this family is really the last abdominal segment, and in drawing up the description of *R. ribicola* referred to it as such. Further study of the group gives additional evidence in support of this view, but in order to avoid confusion I have in the following descriptions followed the usual custom and referred to this segment as the ovipositor.

I have to thank Professor J. M. Aldrich, of the University of Idaho; Mr. Trevor Kincaid, of the University of Washington, and

Professor V. L. Kellogg, of Stanford University, for kindly placing their collections of Trypetidæ at my disposal while preparing the present paper.

Acidia fratria *Loew*.

Several specimens reared on *Heracleum* from Almota, Wash., others collected at Pullman, Wash. In the single female in this lot the ovipositor is black, whereas Loew describes his specimens as having this segment yellow. In comparing these specimens with Thompson's description of *liogaster* there seems to be little doubt but that *liogaster* and *fratria* are the same species as Loew suspected. The black ovipositor also lends much weight to the supposition that this may be the same as *T. heraclei* Linn. The coloring of the body and the depth of the coloring of the wings is subject to considerable variation.

Epochra canadensis *Loew*.

Quite abundant over the state and of considerable economic importance as the larvæ attack both currants and gooseberries.

Straussia longipennis *Wied.*

I have many specimens before me from widely different localities, which seemingly might be distributed among seven or eight different varieties, but there is such an intergradation of forms that it is almost if not quite impossible to fix the limit of any group. I have seen no specimens from this state.

Spilographa electa *Say*. A single male from Tennessee.

Spilographa setosa, sp. nov. (Pl. III, Fig. 1).

♂ ♀. Head and its appendages, thorax, legs and abdomen wholly yellow. Front of medium width; bristles brownish black; third joint of antennæ slightly concave on upper side, anterior corner rather sharp; face with moderately deep furrows; oral margin not at all projecting; proboscis and palpi short. Thorax with very short brownish black pile; besides the two black spots on the metanotum there is a small black spot just back of the base of the wing usually concealed by the alulets. Posterior femora with a few weak brownish bristles near the tip on upper side; the short weak cilia of the posterior tibia are also brownish. Abdomen with brownish black pile and a few bristles of the same color; ovipositor conical of same color and about as long or a little longer than the preceding segment.

Wings hyaline, yellowish toward base and with brown cross-bands. The first of these, which is broken and more or less indistinct, extends from the humeral cross-vein quite across the anal cell, the posterior corner of which is much produced; the second cross-band extends from the stigma across the anterior cross-vein and about half way across the third posterior cell, not reaching the posterior margin; the third

cross-band is more oblique, beginning just before the tip of the second vein and extending across the posterior cross-vein it reaches the posterior margin of the wing just back of the tip of the fifth vein, where it is usually broader, fading out gradually as it nears the second cross-band; completely united with the third cross-band anteriorly and seaming the tip of the wing is another band reaching a little beyond the tip of the fourth vein; between the second and third cross-bands and parallel with the latter is a narrow band reaching from the costa to the third vein; the whole of the anal and second basal cells and the bases of the first basal and sub-marginal cells show a distinct yellowish tinge; veins yellowish; first and third with rather stout bristles, latter with very few, one or two of which are beyond the anterior cross-vein. Length, ♂ 5 mm.; ♀ 6 to 7 mm. Nine males, four females.

Habitat: Wash., Ida., Mich., S. D., Minn.

I have before me quite a large series of this species which seems to be subject to little variation, although in a single female the abdomen is much darker, almost brownish, and the third cross-band is interrupted at the third vein.

Differs from *T. flavonotata* Macq., which it most closely resembles in having no trace of lighter markings on thorax; dark instead of light cilia on hind tibia; in having bristles on posterior femora and the black spot behind the wings, etc.

Ædicarena diffusa *Snow*.

The length of the ovipositor is subject to some variation, sometimes being fully as long as the three preceding segments taken together.

Habitat: Wash., S. D., Colo.

Plagiotoma obliqua *Say*. Illinois, Iowa.

Trypeta palposa *Loew*. Minnesota, Iowa.

Trypeta occidentalis *Snow*.

It may be well to add to the description of this species that the color is light grayish yellow, lighter than *T. palposa*; fifth segment of male with a black spot on each posterior corner. In some specimens the band seaming the tip of the wing is not united anteriorly with the third cross-band, but separated from it by a narrow hyaline space.

Habitat: Wash., Ida., Colo., S. D.

Trypeta straminea, sp. nov. (Pl. III, Fig. 2).

♂. ♀. Yellow; head brighter yellow; front rather broad; bristles brownish black; postorbital bristles whitish; antennæ yellow; third joint rather short broad, rounded; arista yellowish at base, darker towards tip; palpi broad, rather large, with

small black bristles. The black on the dorsum of the thorax is partially concealed by whitish pollen and whitish yellow pile; the posterior pair of the four dorsal bristles is situated in the yellow rectangular area in front of the scutellum and arise from large black dots, the anterior pair arising from smaller dots is situated along the anterior margin of this area; metanotum, a spot back of the base of the wing, a spot at the base of the halteres, and another above the posterior coxæ, black; legs wholly yellow, tarsi slightly darker. Abdomen wholly yellow with the following black spots on the male: two on the anterior margin of the second segment near the middle; four on the anterior margin of the third, fourth and fifth segments, two of which are median and two lateral; two on the posterior lateral margin of the fifth segment. Female with the black spots as in the male with the addition of the four borne on the sixth segment, but with none on the posterior lateral margin of the fifth; ovipositor reddish yellow, black at extreme tip, flattened, longer than the three preceding segments taken together; pile of abdomen whitish yellow; bristles black.

Wings rather long and narrow; whitish hyaline with a brownish yellow picture which extends along the costal border from the base of the wing to the tip of the first vein; the first portion reaches posteriorly as far as the sixth vein, covering the basal cross-veins and leaving only the basal portion of the second basal cell and a small spot at the extreme base of the sub-marginal cell, hyaline; the second portion of this picture extends posteriorly only to the third vein; the band arising at the tip of the first vein and extending over the anterior cross-vein fades out about the middle of the third posterior cell; the second band, however, which arises on the costa some distance before the tip of the second vein and extends across the posterior cross-vein reaches almost, if not quite, to the posterior margin of the wing; seaming the tip of the wing and connected along the costal border with the second cross-band is another band reaching a little beyond the tip of the fourth vein. All these bands are edged with darker brown; veins yellowish or brownish; first with bristles; third with three or four bristles at the point where the second vein branches from it. Along the posterior border of the wing and in a large triangular spot in the first and second posterior cells the whitish hyaline is replaced by a much darker hyaline. Length, ♂ 4.5 mm.; ♀ 5 to 6 mm. Sixteen males, six females.

Habitat: Washington.

Different from *T. occidentalis*, which it must closely resemble, in the following particulars: Smaller, dark reddish yellow instead of lighter yellow; pile on thorax and abdomen not so long or dense; wings comparatively narrower. I have a large series of both species before me and find these differences to be constant with no intermediate form.

***Ædaspis anthracina*, sp. nov.** (Pl. III, Fig. 3).

♀. Deep shining black; front rather broad; yellowish brown with a median narrow dark brown line running forward from the dark brown ocellar triangle to meet a crescent shaped line of the same color which extends transversely across the middle of the front; beside the usual bristles on the vertex and front which are black, the head is furnished with short, bristle-like or stubble-like white hairs of which there is

a postorbital row and a single row arranged between the frontal bristles and the eyes, and others scattered over various parts of the head; face and cheeks grayish white, slightly infuscated under the eyes; oral opening small; proboscis and palpi short; antennæ honey yellow; the black arista slightly incrassated at base. Thorax shining black with short white stubble-like pile and a few black bristles; the tumid scutellum concolorous, with four black bristles; the shining black metanotum has, under the swelling lying immediately under the scutellum, a cross-band of white pollen. Abdomen shining black; second segment with short white pile posteriorly; third and fourth segments with white pile anteriorly and with black pile medianly and posteriorly; fifth and sixth segments wholly with white pile; ovipositor flattened, much elongated, nearly as long as all the preceding taken together, wholly shining black with very short black pile. Coxæ and femora, except the tips of the latter, black; trochanter, tip of femora, tibia and tarsi reddish yellow; front femora on under side with a few black bristles. Wings whitish hyaline, rather broad and with three broad dark brown cross-bands and a sub-triangular basal spot; extreme base of wing whitish with a faint tinge of yellow; a dark brown, almost blackish brown, triangular spot extending from the costa across the basis of the basal cells to the axillary incision; the first two cross-bands are connected anteriorly but posterior of the third vein they are separated by a hyaline space slightly narrower than the second cross-band; the first cross-band is widest posteriorly where it spreads on toward the base of the wing, filling about two-thirds of the axillary corner; the third cross-band is separated from the second by a hyaline space which is about twice as broad posteriorly as anteriorly; it borders the apex of the wing far beyond the tip of the fourth vein, but, as it does not quite touch the margin at all points, it leaves a small sub-triangular hyaline spot just before the tip of the second vein and a narrow hyaline space between the tips of the second and third veins upon the dark brown cross-bands between the stigma and the hyaline space separating the first and second cross-bands, is a rather broad light brown spot which bends downward along the middle of the second cross-band across the small cross-vein and reaches the fourth longitudinal vein; there is also a light brown spot in the third cross-band, extending from near the costa quite to or slightly beyond the third vein; also a small round light spot in the second cross-band in the discal cell; veins brownish; first with bristles; cross-veins very approximate and perpendicular. Length, ♀ 5 mm. Two females.

Habitat: Idaho, Michigan.

This species differs from *O. atra*, which it most closely resembles, in having the ovipositor flattened instead of conical, the first and second cross-bands not so divergent, the second and third cross-bands more widely separated, no stripes on the thorax, etc.

Rhagoletis pomonella *Walsh*.

Habitat: Mass., Colo., S. D. Not known to occur in Washington.

Rhagoletis ribicola *Doane* (Pl. III, Fig. 4). Destructive throughout the State.

Habitat: Washington, Idaho.

Rhagoletis caurina, sp. nov. (Pl. III, Fig. 5).

♀. Black; head and its appendages yellow; front darker, rather broad, not narrowed anteriorly; bristles black; oral opening rather large; margins only slightly projecting; proboscis and palpi moderately long; dorsal side of third joint of antennæ only slightly concave, anterior corner rounded; arista black; occiput black; thorax black, sparsely dusted with whitish pollen and with thick short black pile; scutellum for the most part yellow, black at sides, with four black bristles; legs for the most part reddish yellow; coxæ, a spot at base of femora and the fourth and fifth tarsal joints black; the spot at base of femora sometimes forms a more or less complete band and the third tarsal joint is sometimes also darker. Abdomen shining black with thick, short, black pile; ovipositor shining black, flattened, a little longer than the three preceding segments taken together. Wings hyaline with a brown picture consisting of short bands and dots, arranged as follows: a rather faint dot on humeral vein; a narrow band running from the first vein across the basal cross-veins ending abruptly at the sixth vein; a broader band beginning in the costa just before the tip of the first vein and running across the anterior cross-vein, ending abruptly at the fourth vein; a short band beginning in the costa a short distance beyond the tip of the first vein and ending abruptly on the third vein; a dot at the tip of the second vein; a spot in the tip of the wing filling the tip of the first posterior cell and extending into the extreme tip of the sub-marginal cell; a short band across the first posterior cell below the tip of the second vein, a band covering the posterior cross-vein; a rather large roundish dot on the fifth vein about the middle of the length of the discal cell. Length, 3.5 mm. One female.

Habitat: Oregon.

Although the picture on the wings of this species differs greatly from any of its co-genators, the general structure and coloring of the body is so like that of other *Rhagoletis* that I do not hesitate to assign it to this genus.

Aciura insecta Loew. Jamaica, W. I.

Aciura ferruginea, sp. nov. (Pl. III, Fig. 6).

Head and its appendages yellow; front rather broad hardly narrowed anteriorly; bristles reddish brown; third joint of antennæ rounded at tip; arista yellow at base, darker towards tip; palpi and proboscis long. Thorax cinerous, covered with a thick, short, reddish pile; scutellum yellowish along the posterior margin, with two bristles; legs wholly yellow; front femora with rather long yellow hairs below. Wings dark brown, yellowish at base with the following spots whitish hyaline: Two in costal cell; two in marginal cell beyond the tip of first vein, the second extending quite across the sub-marginal cell; two in the second posterior cell; three in the third posterior cell, the middle one of these being smallest and not reaching the margin as do the others; a round one in the first basal cell opposite the stigma and a similar one in the discal cell beyond the anterior cross-vein. In the region of the anterior cross-vein the dark brown of the wing is variegated with a somewhat yellowish irregular spot; a very much smaller but similarly colored spot also occurring in the stigma; first and third veins bristly, latter with only a few weak ones.

Habitat: Washington.

A single specimen in which the abdomen is missing, but the reddish pile of the thorax, the yellow on the posterior margin of the scutellum and the characteristic markings of the wings make it easily recognizable.

***Aciura nigricornis*, sp. nov.** (Pl. III, Fig. 7).

Wholly reddish yellow; front broad, the lateral portions remarkably produced, each side bearing three large spines and two bristles; the anterior pair of spines is the largest and more curved; the posterior pair shortest and straight; a single pair of the black vertical bristles very long and stout; face somewhat flattened and receding; oral opening large; proboscis and palpi short but prominent; antennæ reaching about to the middle of the face; third joint rounded; arista black, yellowish toward base; thorax with short black pile and black bristles, with a small black spot just above the base of the wings; the broad somewhat tumid scutellum with two strong black bristles; legs wholly reddish yellow; front femora slightly incrassated and with a few weak bristles below. Wings rather broad, rounded, dark brown; the extreme base, the axillary corner and the following spots whitish hyaline: one in the costal cell extending from the costa to the third vein; two just beyond the tip of the first vein, the first extending posteriorly a little more than half way across the sub-marginal cell, the second reaching entirely across this cell; a large somewhat triangular incision in the second posterior cell and a much narrower one in the third posterior cell; a round spot in the first posterior cell in front of the posterior cross-vein; another in the discal cell almost behind the anterior cross-vein and another in the first basal cell below the stigma. The hyaline in the axillary corner extends into the third posterior cell and reaches the fifth vein at one point; first and third veins with bristles.

Habitat: Pennsylvania.

I possess only a single specimen of this interesting species and unfortunately the abdomen is missing. The picture of the wings and the two bristled scutellum show a close relation to the genus *Aciura*, but the larger size, the broader wing and the remarkably developed front with its strong spines and bristles would seem to furnish sufficient character for the erection of a new genus. This, however, I hesitate to do until I have examined more specimens.

***Acrotænia otopappi*, sp. nov.** (Pl. III, Fig. 8).

♀. Yellowish; with very thick white pile; head whitish yellow; front with a brownish tinge; a single pair of frontal bristles white, others brownish; face whitish, deeply excavated; oral openings not very large, margins but slightly projecting; proboscis and palpi short; antennæ darker yellow; third joint rounded; arista brown; the black on the dorsum of thorax almost wholly concealed by the very thick white pollen and the short pile; with three indistinct brownish lines; scutellum yellow with four brown bristles; metanotum black with thick white pollen; legs wholly light yellow; abdomen blackish; the posterior margin of each segment and an interrupted

median line yellowish; ovipositor flattened, reddish yellow, blackish at base and tip, a little longer than the three preceding segments. Wings very broad and rounded; the picture for the most part light brown, but the portion between the second vein and the margin much darker brown; the first of the hyaline incisions in the second posterior cell extends nearly half way across the first posterior cell, the second hardly reaches beyond the fourth vein; a rather large hyaline spot a little before, and another somewhat larger one just beyond the tip of the second vein. The remaining portion of the wing is covered with a multitude of small hyaline spots, those in the apical half much smaller than those in the basal half, many of which coalesce; distal half of second vein sinuous; first and third veins bristly. Length, ♀ 4.5 mm.

A single female found dead in the head of a dried specimen of *Otopappus acuminatus* from Mexico.

Eutreta diana O. S.

Habitat: Nebraska, Washington. Those from Washington reared from galls on *Artemisia tridentata*.

Eutreta sparsa Wied.

These show considerable variation in the picture of the wings. One from South Dakota, male, is a typical specimen. Those from California have the wings somewhat narrower and the rather dim pellucid drops extend to the costa anteriorly, resembling closely Mr. Snow's figure in Kans. Univ. Quart., Pl. VI, Fig. 10. The single specimen from Pennsylvania, a male, is much smaller and has narrower wings.

Habitat: Colo., S. D., Cal., Pa.

Eutreta nora, sp. nov. (Pl. III, Fig. 9).

♀. Brown; head and its appendages and legs yellow; front very broad, more reddish yellow medianly and with each of the three black bristles on either side arising from a small dot; face slightly hollowed out; mouth opening large, edge projecting; proboscis short; palpi short and broad; third joint of antennæ short, broad, slightly concave above, anterior corner rather sharp; arista brown with a very short pubescence. Thorax grayish brown with blackish piliferous spots and fuscus streaks; the short, sparse pile is reddish; scutellum somewhat yellowish with a broad median fuscus band and a rather large fuscus spot at the bases of the bristles; the four bristles of the scutellum, as well as those of the thorax, black; metanotum black with grayish pollen latterly. Abdomen dark velvety brown, with a narrow median longitudinal grayish line; pile white; ovipositor, except a reddish lateral spot, shining black, flattened, about as long as the four preceding segments taken together. Wings broad, round, black, covered with numerous white round dots which vary considerably in size, the largest ones being found in the marginal cell and second and third posterior cells; interspersed among the whitish hyaline dots are many small yellowish spots; posterior cross-vein very much curved; the bristles on the third vein are short and

weak, but extend far beyond the anterior cross-vein. On one wing in the single specimen before me, there are two short spurious veins extending from the costa into the marginal cell, on the other wing only one of these veins is present. We cannot consider them as being of any taxonomic importance. Length, ♀ 5 mm. One female.

Habitat: Idaho.

Eutreta aurantiaca, sp. nov. (Pl. III, Fig. 10).

♀. Black; the broad, flattened front yellowish brown with black bristles, those nearest the vertex having small black dots at their bases; face more whitish, broad, flattened, slightly receding; oral opening large; margin not produced; antennæ yellow; third joint slightly concave above, anterior corner sharp; arista yellow at base, brownish toward tip; occiput black. Thorax black with reddish pollen and thick reddish pile; scutellum shining black with a small yellowish spot on each side posteriorly; the four black bristles as well as those of the thorax and vertex tipped with yellow or white; metanotum shining black; legs reddish yellow; femora with a black spot a little beyond the middle on the ventral side. Abdomen shining black; each segment, except the first, with three yellow spots; pile for the most part black, but along the posterior margin of the second segment and in the region of the yellow spots it is golden yellow; ovipositor shining black, flattened, very short, about as long as the preceding segment. Wings rather broad, rounded at apex, dark brown with whitish hyaline spots somewhat equally distributed over the whole surface of the wing, being largest along the anterior and posterior margins, those in the basal portions are somewhat infuscated, usually with a yellowish tinge; first and third veins with bristles. Length, 24 mm. One female.

Habitat: Washington.

Carphotricha culta Wied.

I have before me a number of specimens all of which I believe belong to this species, but which may be easily separated into three groups; the first of these contains forms which are undoubtedly *T. culta* Wied., differing in no respect from Loew's figure and description. The second group contains smaller, lighter-colored forms which I would unhesitatingly identify as *T. cultaris* Coq., were it not for the fact that I find intermediate forms. The typical members of this group have only one brown ray between the apices of second and third veins, others have only a slight trace of a second ray, still others have a complete second ray; the length of the last segment of the abdomen varies, so this character is useless; the only constant difference I can find is the absence of the darkish spots in the second posterior cell, but in the first group containing typical *culta* I find some specimens in which this spot is nearly or quite wanting. The third group contains specimens slightly larger and darker than typical *culta* but with three brown rays between apices of second and third vein and a

triangular spot between the apices of third and fourth vein, the base of the triangle resting on the margin of the wing; but again between these extreme forms I find intergradations, some with only two rays and a trace of a third, others with two complete rays and a third almost complete, etc. The second and third groups might be considered as distinct varieties, but certainly not distinct species.

Habitat: Wash., Oregon, Ida., S. D., Fla.

***Eurosta solidaginis* Fitch.**

I have a large series of this species from widely different localities, showing considerable differences in the picture on the wing and the coloring of the body.

Habitat: Wash., Ida., S. D., Minn., Nebr., N. H.

***Eurosta comma* Wied.**

A single male, the hyaline space at the tip of the sixth vein is much larger than in Loew's figure (Mon. III, Tab. XI, fig. 2).

***Eurosta reticulata* Snow.** Colo., S. D., Minn.

***Eurosta conspurcata*, sp. nov.** (Pl. IV, Fig. 1).

♂. Brown; front very broad, brownish yellow; face whitish, somewhat hollowed out; mouth opening large, edge projecting; antennae light yellow, third joint shorter; arista yellowish darker toward tip; bristles of the head, thorax and the four bristles of the scutellum, black; thorax broad, very convex with short reddish and black pile; metanotum black except on the sides which are reddish brown; legs reddish yellow, femora darker; front femora much darker, slightly incrassated, with black bristles beneath; abdomen quite broad, brown with thick short black pile; posterior margin of segments lighter; wings rather broad rounded, brown with large round or roundish whitish hyaline spots and smaller yellowish spots. In the third posterior cell several of the hyaline spots are united so as to appear as a single large hyaline space; in the second posterior cell three or four, and in the first posterior cell three, of the spots are thus united. Beside these, the following spots also occur: Two or three in the costal cell before the tip of the auxiliary vein; three in the marginal cell, two of which are just beyond the tip of the first vein, the third a little before the tip of the second vein; four in the sub-marginal cell, three near the tip, the other over the anterior cross-vein; one in the first basal cell below the stigma; one in the discal cell below the anterior cross-vein, and a few other smaller ones over the posterior portion of the wing. There are two spots on the stigma, one yellowish, the other nearly hyaline. Beside the yellowish dots in the middle portion of the wing there is a small yellowish area in the region of the anterior cross-vein; in the first posterior cell is a somewhat darker shining spot which at an oblique view shows much darker. The first and third veins bristly. Length, ♂ 5 mm. One male.

Habitat: Washington, New Hampshire, New Jersey.

The picture of the wing resembles that of *E. reticulata* Snow, but

the hyaline spots and spaces are larger and somewhat differently arranged, and there are not as many small yellow spots.

Eurosta aterrma, sp. nov. (Pl. IV, Fig. 2).

♀. Dull black; head and its appendages, scutellum, pleura and legs yellow; front remarkably broad, more brownish yellow; bristles black; face lighter, excavated; oral opening large, margins projecting; proboscis and palpi short; antennæ short, third joint rounded, nearly as broad as long, arista brown, yellowish at base; thorax with short sparse white pile and black bristles; the four bristles of the scutellum black; posterior femora with an inconspicuous black spot on under side near the base; abdomen wholly dull black with short sparse white pile; ovipositor flattened, black, reddish brown latterly, a little longer than the preceding segment. Wings with a brown picture, the basal portion of the wing, a broad deep irregular incision reaching from the posterior margin to the third vein and the following spots whitish hyaline: one on the costa just before the stigma reaching as far back as the second vein; four in the marginal cell beyond the tip of the first vein; first and second small, third and fourth large; a large one in the sub-marginal cell; two larger ones in the first posterior cell and a large indentation in the second posterior cell reaching from the posterior margin to the fourth vein; the six spots last named forming an irregular hyaline band across the wings. The other hyaline spots which are much smaller are scattered over various parts of the wings, but are confined for the most part to that portion beyond the hyaline cross-band. Beside these hyaline dots the brown picture is marked by numerous small yellowish brown spots which are most numerous in the middle portions of the wing along the second vein. The stigma is darker and marked by two yellowish spots. In the first of the hyaline indentations arising from the posterior margin are four or five small isolated brown spots; in the second indentation only one such spot. Length, 5 mm. One female.

Habitat: Colorado.

Neaspilota brunneostigmata, sp. nov. (Pl. IV, Fig. 3).

♂. ♀. Light yellow; the grayish black on the dorsum of the thorax almost concealed by the thick pollen and pile; head and its appendages yellow, front rather broad slightly narrowed anteriorly; face lighter yellow somewhat hollowed out; oral opening rather large, margin slightly projecting; proboscis and palpi prominent, palpi quite long and narrow; antennæ darker yellow; arista yellow, darker toward the tip; the black on the cephalic aspect of the thorax is not covered with white pollen and appears as a shining black round dot; scutellum yellow; the four bristles, as well as the others of the thorax and head, brownish; metanotum black, yellow at the sides and for the most part covered with gray pollen; legs yellow; tarsi, especially the last segment, darker; wings hyaline; veins yellowish, the stigma, the costal vein, the anterior and posterior cross-veins, and the tips of veins two, three and four, brown; first vein only with bristles. Abdomen yellow, sometimes brownish with short, thick, white pile; ovipositor reddish yellow as long or longer than the three preceding segments taken together. Length, ♂ 3 to 4 mm., ♀ 3 to 7 mm. Three males, two females.

May easily be separated from *T. alba* Loew, and *T. signifer* Coq.

by the stigma being wholly brown and from *T. albidipennis* by the coloring of the body. The great difference in the size of the two females is somewhat remarkable, but they are alike in every other particular.

Ictericaria seriata Loew.—New Jersey, Illinois.

Ensina humilis Loew.—Jamaica, Kans., S. D., Ia., Tenn., Miss., Ill.

Tephritis finalis Loew.—Washington (reared from the heads of various *Compositæ*), Ida., S. D., Colo., Cal., N. M.

Tephritis variabilis, sp. nov. (Pl. IV, Fig. 4).

♂. ♀ Cinerous; head cinerous; front brownish except at sides and with two ferruginous stripes; face only slightly hollowed out; mouth opening large, margins slightly projecting; palpi rather large, whitish; proboscis long, yellow, geniculate; antennæ light brown, arista brown; postorbital bristles and a single pair of the frontal bristles white, others black; occiput and ocellar triangle black; thorax, cinerous with short whitish pile and five ferruginous stripes; the three median ones broader posteriorly; also a small ferruginous spot on the humeri; scutellum with two ferruginous stripes; the four bristles of the scutellum, as well as those of the thorax, are black and arise from minute black spots; coxæ and femora, except the tips of the latter, cinerous; tibiæ and tarsi reddish yellow. Abdomen cinerous with two rather broad ferruginous stripes; ovipositor wholly shining black, flattened, about as long as the three preceding segments taken together. Wings with a brownish reticulation which is subject to considerable variation; the stigma and the region between the first and fourth veins usually much darker and containing only small or medium sized drops; usually four, but often only three, hyaline drops in the marginal cell beyond the tip of the first vein; over the entire wing there are numerous smaller drops interspersed among the larger ones, the latter often confluent in the discal and third posterior cells; the round spot in the stigma is yellowish; basal portion of some of the veins sometimes with a yellowish tinge; first only with bristles. Length, ♂ 3 to 4 mm., ♀ 3 to 5 mm

Habitat: Washington, Oregon.

I have before me a large series of specimens which I believe to belong to this same species, although the coloring and size of the body and the reticulation of the wings is subject to considerable variation. In some specimens all the parts described above are black and the ferruginous stripes hardly or not all visible, but this I take it is due to various stages of desiccation, as I find all stages between these and the well-marked forms. The six specimens from Oregon are much larger and the ovipositor is as long as all the preceding segments taken together; these may prove to be distinct, but as yet I can find no characters constant enough to separate them.

Tephritis fucata Fabr.—Jamaica, Florida.

Tephritis albiceps Loew.—New Jersey.

Tephritis murina, sp. nov. (Pl. IV, Fig. 5).

♂. ♀. Grayish; head whitish; front lemon yellow narrowly whitish on sides; mouth opening rather large, margins somewhat projecting; palpi and proboscis long, the former whitish, the latter yellowish and geniculate; antennæ yellow; arista brown; postorbital and a single pair of frontal bristles yellowish white, others black; occiput for the most part black; thorax grayish with yellowish white pile; posterior half of scutellum yellowish; bristles black; legs wholly reddish yellow; front femora of one of the males with a short narrow brown stripe on side. Abdomen of female somewhat narrowed, grayish, with rather long thick white pile; ovipositor wholly shining black with very fine reddish pile, flattened, as long or longer than the four preceding segments taken together. Wings rather narrow with a guttate brown reticulation; basal portions nearly without markings; the dark brown stigma with a round sub-hyaline spot; the hyaline spots for the most part large and quite round, nearly confluent except in basal and posterior portions of the wing; few small hyaline dots interspersed among the larger ones in the apical portion of the wing; third vein with a few widely separated bristles. Length, ♂ 4 mm., ♀ 4.5 to 5 mm. Three males, three females.

Habitat: Washington.

The reticulation of the wings closely resembles that of *T. albiceps*, but the larger size of this species, together with the absence of black markings on the abdomen, the greater length of the ovipositor, etc., makes it easy to distinguish the two species.

Tephritis webbii, sp. nov. (Pl. IV, Fig. 6).

♀. Black; head yellowish; front darker, rather broad; face hollowed out; mouth opening large with its edges projecting; first and second joints of antennæ yellowish, third joint brown; arista brown, lighter toward base; some of the postorbital bristles white; other bristles of the head as well as those of the thorax and scutellum black. Thorax with brownish pollen and short white pile above and whitish pollen below; legs brownish yellow, thickly beset with short black hairs; femora somewhat darker, front femora with a few black bristles below and a few white hairs above. Abdomen blackish, almost slate color, thickly beset with short black pile, a few black bristles and some white pile; ovipositor, except for two yellowish spots on lateral margins, shining black, flattened, not quite as long as the two preceding segments taken together. Wings uniformly slate color with whitish hyaline spots; these are largest along the apical and posterior margins, where they are often confluent; in the middle portions of the wing are several smaller round hyaline spots; basal portions with little of the gray markings; stigma black; first vein with bristles. Length, ♀ 5 mm. Two females.

Habitat: Idaho, Minnesota.

A single specimen from Minnesota is much lighter, the abdomen

showing a reddish tinge and the picture of the wing being more brownish.

Tephritis californica, sp. nov. (Pl. IV, Fig. 7).

♀. Head and its appendages, legs, humeri, a line running from humeri to base of wings and the scutellum, except the black median portion, yellow; front rather broad somewhat narrowed anteriorly; postorbital bristles and a single pair of frontal bristles yellow, other bristles of the head as well as those of the thorax and scutellum dark brown, almost black; third joint of antennæ rounded; arista brownish, yellowish at base. Thorax black with yellow pollen and short yellow pile. Abdomen brown with very thick rather long yellow pile; ovipositor flattened; black except a lateral reddish or yellowish spot on either side, not quite as long as the two preceding segments taken together; bristles on the posterior margin of sixth segment brown. Wings rather broad with a yellowish or brownish tinge; with a brown reticulation indistinct in basal portions, but forming two irregular cross-bands in the distal portions, one near the middle and the other toward the apex of the wing; the first of these is narrower and runs from the costa across the stigma and the two cross-veins and reaches the posterior margin at the tip of the fifth vein; the second, which extends across the apical portion of the wing, emits three rays; the first, which is narrower and rather broken, reaches the anterior margin between the tip of the first vein and the cross-band itself; the second, which is also narrow, reaches the margin at the tip of the third vein; the third reaches the margin at the tip of the fourth vein, where it widens somewhat; both of the cross-bands are everywhere marked with mostly roundish hyaline or sub-hyaline dots, third vein with only a few bristles. Length, 5 mm. One female.

Habitat: California.

Tephritis rufipennis, sp. nov. (Pl. IV, Fig. 8).

♂. Brown; head and its appendages, legs and a spot on the humeri yellow; front rather broad, slightly narrowed anteriorly; postorbital bristles and a single pair of the frontal bristles yellow; other bristles of the head as well as those of the thorax and scutellum dark brown, almost black; third joint of antennæ rounded; arista brown, yellowish at base. Thorax almost black with thick short yellow pile; humeri and sometimes a narrow line running from humeri to base of wing yellow; metanotum prominent, black faintly dusted with grayish pollen; legs and feet dark yellow beset with many short black hairs and some yellow ones; femora sometimes slightly darker. Abdomen brown with thick yellowish pile. Wings rather broad with a yellowish tinge; two wide brown reticulated cross-bands, the first near the middle, the second toward the apex; the first begins on the costa, crosses the stigma and, constantly growing wider posteriorly, crosses both the cross-veins and reaches entirely to the posterior margin; a rather broad spur branches off in the region of the fifth vein, filling the base of the third posterior cell and part of the axillary corner of the wing, but not reaching the posterior margin; the second band beginning in the costa at the tip of the second vein and ending in the posterior margin of the second posterior cell is separated from the first anteriorly by a somewhat triangular hyaline space, the apex of the triangle resting on the fourth vein; sometimes, however, the hyaline space does

not quite reach the fourth vein, in which case the two cross-bands are connected along this vein; these bands are everywhere marked with hyaline or sub-hyaline mostly roundish dots of various sizes; besides these bands there is also a small dot on the anterior margin midway between the anterior ends of the bands, and another at, or just beyond, the tip of the fourth vein; veins yellowish, except where crossed by the cross-bands where they are brown; first and third with bristles. Length, ♂ 4 mm. Two males.

Habitat: California.

***Euaresta æqualis* Loew.**

Snow's notes (Kan. Univ. Quat., Vol. II, No. 3, p. 171) are confirmed by my specimens.

Habitat: Wash., Cal., Ida., Ill., Pa.

***Euaresta festiva* Loew.** South Dakota.

***Euaresta tricolor*, sp. nov.** (Pl. IV, Fig. 9).

♂. ♀. Yellow; head and its appendages, bristles, pile and feet also yellow; front broad not narrowed anteriorly; face somewhat receding with two distinct grooves for the reception of the antennæ; cheeks broad; oral margin not projecting; proboscis short, palpi rather long; antennæ not reaching to the middle of the face; third joint rounded; arista incrassated at the base. Dorsum of thorax with a very light brownish pollen; scutellum with four bristles. Abdomen with rather long yellow pile and a few bristles; ovipositor flattened, about as long as the two preceding segments taken together. The basal portions of the wings, with a yellowish tinge; distal half dark brown anteriorly, light brown posteriorly; the dark coloring does not reach as far posteriorly as the fourth vein except in the tip of the wing, where it reaches to or a little beyond this vein; the following whitish hyaline spots occur: two just beyond the stigma, the first reaching nearly to the third vein, the second reaching only a little beyond the second vein; one in the sub-marginal cell just below the tip of the second vein; two in the first posterior cell, the inner one over the posterior cross vein; four in the second posterior cell; one in the first basal cell; two in the discal cell; six or seven in the third posterior cell and one or two in the anal corner of the wing; as the shading on the wing fades out posteriorly the hyaline dots behind the fifth vein are less conspicuous; stigma for the most part brown, basal portion yellowish; first and third veins with bristles. Length, ♂ 6.5 mm., ♀ 7.5 mm. One male, one female.

Habitat: South Dakota.

The reticulated wing picture of this species reminds one more of *Tephritis* than of *Euaresta*, but the general structure and coloring of the body and the bristly third vein seems to show a closer relationship to the latter genus.

***Euaresta tapestis* Coq.** Colorado.

***Euaresta bella* Loew.** Tenn., S. D., N. Y., Neb., Ia., Mich.

Euaresta bellula Snow. California.

Euaresta pura Loew. Massachusetts.

Urellia abstersa Loew. S. D., Ia., Minn., N. M.

Urellia pacifica, sp. nov. (Pl. IV, Fig. 10).

♂. ♀. Brown; front yellow or brownish yellow; face lighter yellow; mouth opening rather large; proboscis short; palpi short but rather prominent; antennae yellow, short, third joint but little longer than broad; arista brown, yellowish at base; ground color of the thorax and the scutellum black, but so thickly covered with a brown pollen as to make it appear light brown in color; pile whitish, short, rather sparse; humeri and usually a spot in front of base of wing yellowish; scutellum with two strong and two weak brownish bristles; legs dark reddish yellow. Abdomen somewhat darker, the whitish pile a little longer and thicker than on the thorax; ovipositor shining black, also with whitish pile, flattened, about as long as the two preceding segments taken together. Wings whitish hyaline, distal two-thirds, with a brown picture which emits eleven rays; the first is very broad and runs from the anterior cross-vein across the stigma to the costa, the second is short and narrow and reaches the costa midway between tips of the first and second veins; the third is very broad and contains a small hyaline dot just beyond the tip of the second vein; the fourth and fifth end upon the tips of the third and fourth veins; the sixth and seventh cross the second posterior cell; the eighth follows the posterior cross-vein; the ninth, tenth and eleventh, which are less distinct, cross the third posterior cell, the ninth sometimes reaching the posterior margin; a large hyaline drop in the first posterior cell just in front of the posterior cross-vein and sometimes smaller drops on other portions of the picture; stigma yellowish in extreme apex; first vein only with bristles. Length, ♂ 2.5 to 3 mm., ♀ 3 to 3.5 mm. Two males, seven females.

Urellia aldrichii, sp. nov. (Pl. IV, Fig. 11).

♂. ♀. Gray; head and its appendages yellow; front with a brownish tinge; slightly narrowed anteriorly; face lighter, excavated; oral opening large; margin projecting; palpi rather long; proboscis short; antennae short, third joint rounded, but little longer than broad; arista brown, yellowish at base; bristles of front and vertex brown. Thorax gray; humeri and pleura yellowish; scutellum with four bristles narrowly margined with yellow and yellow on under side; metanotum black with whitish pollen; legs wholly reddish yellow; the white pile on abdomen longer and thicker than that on the thorax; ovipositor black with a little pile, broad, flattened, but little longer than the preceding segment. Wings whitish hyaline, the brown picture resembling somewhat *Urellia pacifica* with the following differences: Lighter brown; the first broad ray originates some distance before the anterior cross-veins; the ninth, tenth and eleventh rays are less distinct; the hyaline spaces are more numerous and larger; the picture is darker on the stigma and along the veins; the first and third with bristles. Length, ♂ 3 mm., ♀ 3.5 to 4 mm. Five males, four females.

Habitat: South Dakota.

EXPLANATION TO PLATES.

PLATE III.

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| 1. <i>Spilographa setosa</i> , sp. nov. | 6. <i>Aciura ferruginea</i> , sp. nov. |
| 2. <i>Trypeta straminea</i> , sp. nov. | 7. <i>Aciura nigricornis</i> , sp. nov. |
| 3. <i>Edaspis anthracina</i> , sp. nov. | 8. <i>Acrotenia otopappi</i> , sp. nov. |
| 4. <i>Rhagoletis ribicola</i> DOANE. | 9. <i>Eutreta nora</i> , sp. nov. |
| 5. <i>Rhagoletis caurina</i> , sp. nov. | 10. <i>Eutreta aurantiaca</i> , sp. nov. |

PLATE IV.

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|---|--|
| 1. <i>Eurosta conspurcata</i> , sp. nov. | 7. <i>Tephritis californica</i> , sp. nov. |
| 2. <i>Eurosta aterrima</i> , sp. nov. | 8. <i>Tephritis rufipennis</i> , sp. nov. |
| 3. <i>Neaspilota brunneostigmata</i> , sp. nov. | 9. <i>Euaresta tricolor</i> , sp. nov. |
| 4. <i>Tephritis variabilis</i> , sp. nov. | 10. <i>Urellia pacifica</i> , sp. nov. |
| 5. <i>Tephritis murina</i> , sp. nov. | 11. <i>Urellia aldrichii</i> , sp. nov. |
| 6. <i>Tephritis webbia</i> , sp. nov. | |

THE SMYNTHURIDÆ OF LONG ISLAND, NEW YORK.

BY NATHAN BANKS.

Among the Thysanura the Smynthuridæ are doubtless the most interesting group. Higher developed and more handsomely marked than their fellows they more readily attract attention and study. Their habits are various. Some live on stagnant water, several on living healthy plants, most upon decaying vegetation, many on fungi, some among ants, a few in caves, and others among moss. Like most of the Collembola they are quiet until disturbed, when, by the aid of the powerful spring or furcula, they make a great jump, nearly always followed by several other leaps of less extent. Their structure affords several good points for classification and discrimination of species, most prominent of which are the antennæ and furcula. The two common garden species, *S. arvalis* and *S. hortensis*, are of some economic importance.

The spring-tails with a short body constitute the family Smynthuridæ. Lubbock separated certain forms from them under the name of Papiridæ, but to my mind without just cause. Early in the history of these insects they were arranged by Bourlet in two genera, *Smynu-*